

PATENT**REMARKS**

Claims 1-18 are currently pending in this application. Reconsideration is respectfully requested in light of the following remarks.

The Examiner rejected claims 1-6, 8-13 and 15-18 under 35 U.S.C §102(e) as being anticipated by U.S. Patent 6,519,493 to Florio et al. Applicants respectfully traverse this rejection.

Applicants' claimed invention as recited in independent claims 1, 11 and 17 is directed toward a method and apparatus for applying overdrive pacing pulses to a heart. For example independent claim 1 recites a method for controlling a pulse generator to apply overdrive pacing pulses to the heart that includes inputting an initial shape for an overdrive pacing response function wherein the shape of the overdrive pacing response function defines an overdrive pacing rate for each of a plurality of intrinsic heart rates, for use in overdrive pacing the heart ... and adjusting the overdrive pacing rate corresponding to one or more intrinsic heart rates to adjust the initial shape of the overdrive pacing response function so as to improve the degree of overdrive pacing to be achieved during further overdrive pacing if the degree of overdrive pacing falls below the threshold. Applicants respectfully submit that Florio et al. do not disclose or suggest the recited claim elements.

Rather, the cardiac stimulation device of Florio et al. utilizes an overdrive pacing algorithm which is controlled by programmable values, i.e., control values, input from a memory. Depending upon the overdrive pacing technique, the programmable values may be representative of an overdrive pacing rate, an overdrive pacing margin, a pacing cycle length or the like. The cardiac stimulation device of Florio et al. then compares the actual degree of pacing achieves with the programmable values with a target degree of pacing. The cardiac stimulation device then adjusts the values (linearly or non-linearly) used from memory so as to reduce any difference between the actual degree of pacing and the target degree of pacing. (Florio et al., col. 9, lines 15-67).

Florio et al. further disclose a more specific overdrive pacing algorithm that operates to maintain the overdrive pacing rate at a rate equal to the intrinsic rate plus a programmable rate margin. The device of Florio et al. adaptively varies the rate margin

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to maintain a target degree of pacing. For example, in FIG. 6, the device of Florio et al. inputs an initial overdrive pacing margin from a memory unit 502. The margin may be, for example, five beats per minute (bpm)--indicating that the heart is to be paced at a rate equal to the intrinsic heart rate plus five bpm. The device then periodically counts the number of paced beats and the number of unpaced beats to determine a percentage of paced beats using the overdrive pacing margin. (Florio et al., col. 6, lines 13-17 and lines 42-50).

The cardiac stimulation device of Florio et al. then compares the percentage of based beats with a target degree of pacing and automatically increases or decreases the overdrive pacing margin by a predetermined amount, such as one ppm to maintain the actual percentage of paced beats at a level about equal to the target degree of pacing. (Florio et al. col. 6, lines 53-64).

Florio et al. do not however, disclose or suggest storing a overdrive pacing response function having a shape that defines an overdrive pacing rate for each of a plurality of intrinsic heart rates and adjusting the shape of the overdrive pacing response function to improve the degree of overdrive pacing to be achieved during further overdrive pacing as recited in applicants' claimed invention.

Rather Florio et al. simply adjust a current overdrive pacing margin to provide a desired degree of pacing. Future overdrive pacing by the Florio et al. device then reverts back the stored rate margin (i.e. 5 bpm) resulting in the likely need to readjust the overdrive pacing rate to achieve a desired degree of pacing. Applicants' invention on the other hand utilizes the adjusted rate response function that has previously been optimized to provide the desired degree of pacing.

Accordingly, applicants respectfully submit that independent claims 1, 11 and 17 are novel and unobvious over Florio et al. and are allowable. Applicants further submit that claims 2-10, claims 12-16 and claim 18 that depend from claims 1, 11 and 17 respectfully are allowable as are claims 1, 11 and 17 and for additional limitations recited therein.

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In light of the above remarks, it is respectfully submitted that the application is in condition for allowance, and an early notice of allowance is requested.

Respectfully submitted,

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Date

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